

ABSTRACT

New precursors and processes are provided to generate fluorinated low *dielectric constant*, ϵ films that have higher dimensional stability and more rigid than fluorinated Poly (Para-Xylylenes). The low ϵ films are prepared primarily from polymerization of precursors consisting of both benzocyclobutane and unsaturated carbon-carbon groups such as vinyl (C=C) and ethylenic groups. The low ϵ polymers consists primarily of SP^2C-F , hypercounjugated $Sp^3C_{\alpha}-F$ type or/and $Sp^3Si_{\alpha}-F$ fluorine. The low ϵ (< 2.4) films are useful for fabrications of future $< 0.18 \mu m$ ICs. Using low ϵ films prepared according to this invention, the integrity of dielectric, Cu and its barrier metals such as Ta can be kept intact; therefore reliability of these ICs can be assured.